

CLAIMS:

1. A method for the screening of ligands which bind a cerebral cortical voltage-dependent
5 calcium channel $\alpha_2\delta$ -1 subunit, said method comprising the steps of:
- contacting a secreted soluble recombinant calcium channel $\alpha_2\delta$ -1 subunit polypeptide with:
 - a ligand of interest; and
 - a labelled compound which binds the $\alpha_2\delta$ -1 subunit; and
 - 10 - measuring the level of binding of the labelled compound to the $\alpha_2\delta$ -1 subunit.
2. A method according to claim 1, wherein said contacting and said binding is in a well of a flashplate.
- 15 3. A method according to claim 1, wherein said secreted soluble recombinant calcium channel $\alpha_2\delta$ -1 subunit polypeptide is selected from the group consisting of SEQ ID NO: 6, 7, 8, 9, 13, 14 and 15.
4. A method according to claim 1, wherein said secreted soluble recombinant calcium
20 channel $\alpha_2\delta$ -1 subunit polypeptide is selected from the group consisting of SEQ ID NO: 9 and 15.
5. A method according to claim 1, wherein said secreted soluble recombinant calcium
channel $\alpha_2\delta$ -1 subunit polypeptide is SEQ ID NO: 9.

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SEQUENCE LISTING**1- porcine nucleotide sequence alpha2 delta-1**

GGGGATTGATCTTCGATCGCGAAGATGGCTGCTGGCTGCCTGCTGGCCTTGACTCTGACAC
TTTTCCAATCTTTGCTGATCGGTCCCTCATCGCAGGAGCCGTTCCCGTCGGCCGTCCTAT
5 CAAGTCATGGGTGGATAAAATGCAAGAAGACCTTGTCAACCCTGGCAAAAACAGCAAGTGG
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15 TTATCAGTCAGTGTGTGAGCCTGGTGCTGCACCAAACAAGGAGCAGGACATCGCTCAGCA
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2 - porcine nucleotide sequence

5 ATGGCTGCTGGCTGCCTGCTGGCCTTGACTCTGACACTTTTCCAATCTTTGCTGATCGGTC
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10 GGAAGCAGAGAAGGTTCAAGCAGCCCACCAGTGGAGAGAGGATTTTGCAAGCAATGAAGTT
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25 **3 - porcine nucleotide sequence**

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4 - porcine nucleotide sequence

15 ATGGCTGCTGGCTGCCTGCTGGCCTTGACTCTGACACTTTTCCAATCTTTGCTGATCGGTC
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20 GGAAGCAGAGAAGGTTCAAGCAGCCCACCAGTGGAGAGAGGATTTTGCAAGCAATGAAGTT
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30 TCTGTCAAAGCAGAGTTGCATTACTGAACAAACCCAGTATTTCTTTGATAATGATAGCAAA
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ACTGTGGTGGTGTTCCTTGA

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5 - porcine amino acid sequence alpha2 delta-1

MAAGCLLALTTLTFQSLLIGPSSQEPFPSAVTIKSWVDKMQEDLVTAKTASGVNQLVDIY
EKYQDLYTVEPNNAARQLVEIAARDIEKLLSNRSKALVRLALEAEKVQAAHQWREDFASNEV
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10 NWTALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
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15 GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
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25

6 - porcine amino acid sequence

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DIKVEIRNKMIDGESGEKTFRTL VKSQDERYIDKGNRTYTWTVPVNGTDYSLALVLPTYSFY
5 YIKAKIEETITQARSKKGKMKDSETLKPDNFEESGYTFIAPRDYCNDLKISDNNTFLLNF
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10 LHIGWWATAAAWSILQQFLLSLTFPRLLLEAVEMEDDDFTASLSKQSCITEQTQYFFDNDISK
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7 - porcine amino acid sequence

MAAGCLLALTTLTFQSLIGPSSQEPFSAVTIKSWVDKMQEDLVTAKTASGVNQLVDIY
15 EKYQDLYTVEPNARQLVEIAARDIEKLLSNRSKALVRLALEAEKVQAAHQWREDFASNEV
VYYNAKDDLDPEKNDSEPGSQRIKPVFIDANFRQISYQHAAVHIPTDIYEGSTIVLNEL
NWT SALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLETSDDDFVNVA SFNSNAQDVSCFQ
HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGE
20 ERAQEIFAKYNKDKKVRVFTFSVGQHNYDRGPIQWMACENKGYYYEIPSIGAIRINTQEYL
DVLGRPMVLAGDKAKQVQWTNVYLDALGLVITGTLPVFNITGQENKTNLKNQLILGVM
GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
DIKVEIRNKMIDGESGEKTFRTL VKSQDERYIDKGNRTYTWTVPVNGTDYSLALVLPTYSFY
YIKAKIEETITQARSKKGKMKDSETLKPDNFEESGYTFIAPRDYCNDLKISDNNTFLLNF
25 NEFIDRKTPNNPSCNTDLINRVLLDAGFTNELVQNYWSKQKNIGVKARFVVDGGITRVY
PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
LLKPAVVGIKIDVNSWIENFTKTSIRDPCAGPVCDCKRNSDVMDCVILDDGGFLLMANHDD
YTNQIGRFFGEIDPSLMRHLVNISVYAFNKSVDYQSVCEPGAAPKQGAGHRSAYVPSIADI
LHIGWWATAAAWSILQQFLLSLTFPRLLLEAVEMEDDDFTASLSKQSCITEQTQYFFDNDISK
30 SFSGVLDCGNCSRI FHVEKLMNTNLI FIMVESKGTCPCDTRL IQAEQTS DGPDPDCDMVK

8 - porcine amino acid sequence

MAAGCLLALTLTLFQSLIGPSSQEPFPSAVTIKSWVDKMQEDLVTLAKTASGVNQLVDIY
EKYQDLYTVEPNNAQQLVEIAARDIEKLLSNRSKALVRLALEAEKVQAAHQWREDFASNEV
VYYNAKDDLDPEKNDSEPGSQRIKPVFIDANFGRQISYQHAAVHIPTDIYEGSTIVLNEL
5 NWTALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLETLDSDDFVNVASFNSNAQDVSCFQ
HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGE
ERAQEIFAKYNKDKKVRVFTFSVGQHNDRGPIQWMACENKGYYYEIPSIGAIRINTQEYL
DVLGRPMVLGADKAKQVQWTNVYLDALGLVITGTLPVFNITGQENKTNLKNQLILGVM
10 GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
DIKVEIRNKMIDGESGEKTFRTLKVSQDERYIDKGNRTYTWTVPVNGTDYSLALVLPTYSFY
YIKAKIEETITQARSKKGKMKDSETLKPDNFEESGYTFIAPRDYCNDLKISDNNTTEFLNLF
NEFIDRKTNNPSCNTDLINRVLLDAGFTNELVQNYWSKQKNIGVKARFVTDGGITRVY
PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
15 LLKPAVVGIKIDVNSWIENFTKTSIRDPCAGPVCDCRNSDVMDCVILDDGGFLLMANHDD
YTNQIGRFFGEIDPSLMRHLVNISVYAFNKSVDYQSVCEPGAAPKQGAGHRSAVPSIADI
LHIGWWATAAAWSILQQFLLSLTFPRLLLEAVEMEDDDFTASLSKQSCITEQTQYFFDNDISK
SFSGLDCGNCSTRIFHVEKLMNTNLIIFIMVESKGTCPCDTRLLIQAEQTS DGPDPDCDMVKQ
PRYRKGPDVCFDNNALDYTDGCGVS

20

9 - porcine amino acid sequence

MAAGCLLALTLTLFQSLIGPSSQEPFPSAVTIKSWVDKMQEDLVTLAKTASGVNQLVDIY
EKYQDLYTVEPNNAQQLVEIAARDIEKLLSNRSKALVRLALEAEKVQAAHQWREDFASNEV
VYYNAKDDLDPEKNDSEPGSQRIKPVFIDANFGRQISYQHAAVHIPTDIYEGSTIVLNEL
25 NWTALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLETLDSDDFVNVASFNSNAQDVSCFQ
HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGE
ERAQEIFAKYNKDKKVRVFTFSVGQHNDRGPIQWMACENKGYYYEIPSIGAIRINTQEYL
DVLGRPMVLGADKAKQVQWTNVYLDALGLVITGTLPVFNITGQENKTNLKNQLILGVM
30 GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
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NEFIDRKT PNNPSCNTDLINRVLLDAGFTNELVQNYWSKQKNIKGVKARFVVT DGGITRVY
 PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
 LLKPAVVGIIKIDVNSWIENFTKTSIRDPCAGPVCDCKRNSDVMDCVILDDGGFLLMANHDD
 YTNQIGRFFGEIDPSLMRHLVNISVYAFNKS YDYQSVCEPGAAPKQGAGHRSAYVPSIADI
 5 LHIGWWATAAAWSILQQFLLSLTFPRLL EAVEMEDDDFTASLSKQSCITEQTQYFFDND SK
 SFSGLDCGNCSRI FHVEKLMNTNLIFIMVESKGTCPCDTRLLIQAEQTS DGPDPDCMVKQ
 PRYRKGPDVCFDNNALEDYTDCGGVSHHHHHH

10 - human nucleotide sequence

10 ATGGCTGCTGGCTGCCTGCTGGCCTTGACTCTGACACTTTTCCAATCTTTGCTCATCGGCC
 CCTCGTCGGAGGAGCCGTTCCCTTCGGCCGTC ACTATCAAATCATGGGTGGATAAGATGCA
 AGAAGACCTTGTCACTGGCAAAACAGCAAGTGGAGTCAATCAGCTTGTGATATTTAT
 GAGAAATATCAAGATTTGTATACTGTGGAACCAAATAATGCACGCCAGCTGGTAGAAATTG
 CAGCCAGGGATATTGAGAACTTCTGAGCAACAGATCTAAAGCCCTGGTGAGCCTGGCATT
 15 GGAAGCGGAGAAAGTTCAAGCAGCTCACCAGTGGAGAGAAGATTTTGCAAGCAATGAAGTT
 GTCTACTACAATGCAAAGGATGATCTCGATCCTGAGAAAAATGACAGTGAGCCAGGCAGCC
 AGAGGATAAAACCTGTTTTTCATTGAAGATGCTAATTTTGACGACAAATATCTTATCAGCA
 CGCAGCAGTCCATATTCCTACTGACATCTATGAGGGCTCAACAATTGTGTAAATGAACTC
 AACTGGACAAGTGCCTTAGATGAAGTTTTCAAAAAGAATCGCGAGGAAGACCCTTCATTAT
 20 TGTGGCAGGTTTTTGGCAGTGCCACTGGCCTAGCTCGATATTATCCAGCTTCACCATGGGT
 TGATAATAGTAGAACTCCAAATAAGATTGACCTTTATGATGTACGCAGAAGACCATGGTAC
 ATCCAAGGAGCTGCATCTCCTAAAGACATGCTTATTCTGGTGGATGTGAGTGGAAGTGTTA
 GTGGATTGACACTTAACTGATCCGAACATCTGTCTCCGAAATGTTAGAAACCCTCTCAGA
 TGATGATTTTCGTGAATGTAGCTTCATTTAACAGCAATGCTCAGGATGTAAGCTGTTTTCAG
 25 CACCTTGTCCAAGCAAATGTAAGAAATAAAAAAGTGTGAAAGACGCGGTGAATAATATCA
 CAGCCAAAGGAATTACAGATTATAAGAAGGGCTTTAGTTTTGCTTTTGAACAGCTGCTTAA
 TTATAATGTTTTCCAGAGCAAACCTGCAATAAGATTATTATGCTATTCACGGATGGAGGAGAA
 GAGAGAGCCCAGGAGATATTTAACAAAACATAAAGATAAAAAAGTACGTGTATTCAGGT
 TTTCACTTGGTCAACACAATTATGAGAGAGGACCTATTCAGTGGATGGCCTGTGAAAACAA
 30 AGGTTATTATTATGAAATTCCTTCCATTGGTGCATAAGAATCAATACTCAGGAATATTTG
 GATGTTTTGGGAAGACCAATGGTTTTAGCAGGAGACAAAGCTAAGCAAGTCCAATGGACAA
 ATGTGTACCTGGATGCATTGGAACCTGGGACTTGTCACTACTGGAACCTCTCCGGTCTTCAA

CATAACCGGCCAATTTGAAAATAAGACAAACTTAAAGAACCAGCTGATTCTTGGTGTGATG
GGAGTAGATGTGTCTTTGGAAGATATTTAAAGACTGACACCACGTTTTTACACTGTGCCCCA
ATGGGTATTACTTTGCAATCGATCCTAATGGTTATGTTTTATTACATCCAAATCTTCAGCC
AAAGAACCCCCAAATCTCAGGAGCCAGTAACATTGGATTTCCTTGATGCAGAGTTAGAGAAT
5 GATATTAAAGTGGAGATTTCGAAATAAGATGATTGATGGGGAAAGTGGAGAAAAACATTCA
GAACTCTGGTTAAATCTCAAGATGAGAGATATATTGACAAAGGAAACAGGACATACACATG
GACACCTGTCAATGGCACAGATTACAGTTTGGCCTTGGTATTACCAACCTACAGTTTTTAC
TATATAAAAGCCAAACTAGAAGAGACAATAACTCAGGCCAGATCAAAAAAGGGCAAAATGA
AGGATTTCGGAAACCCTGAAGCCAGATAATTTTGAAGAATCTGGCTATACATTCATAGCACC
10 AAGAGATTACTGCAATGACCTGAAAATATCGGATAATAACACTGAATTTCTTTTAAATTC
AACGAGTTTATTGATAGAAAACTCCAAACAACCCATCATGTAACGCGGATTTGATTAATA
GAGTCTTGCTTGATGCAGGCTTTACAAATGAACTTGTCCAAAATTACTGGAGTAAGCAGAA
AAATATCAAGGGAGTGAAAGCACGATTTGTTGTGACTGATGGTGGGATTACCAGAGTTTAT
CCCAAAGAGGCTGGAGAAAATTGGCAAGAAAACCCAGAGACATATGAGGACAGCTTCTATA
15 AAAGGAGCCTAGATAATGATAACTATGTTTTCACTGCTCCCTACTTTAACAAAAGTGGACC
TGGTGCCTATGAATCGGGCATTATGGTAAGCAAAGCTGTAGAAATATATATTCAAGGGAAA
CTTCTTAAACCTGCAGTTGTTGGAATTAAAATTGATGTAAATTCCTGGATAGAGAATTTCA
CCAAAACCTCAATCAGAGATCCGTGTGCTGGTCCAGTTTGTGACTGCAAAAGAAACAGTGA
CGTAATGGATTGTGTGATTCTGGATGATGGTGGGTTTCTTCTGATGGCAAATCATGATGAT
20 TATACTAATCAGATTGGAAGATTTTTTGGAGAGATTGATCCCAGCTTGATGAGACACCTGG
TTAATATATCAGTTTATGCTTTTAAACAAATCTTATGATTATCAGTCAGTATGTGAGCCCCG
TGCTGCACCAAAACAAGGAGCAGGACATCGCTCAGCATATGTGCCATCAGTAGCAGACATA
TTACAAATTGGCTGGTGGGCCACTGCTGCTGCCTGGTCTATTCTACAGCAGTTTCTCTTGA
GTTTGACCTTTCCACGACTCCTTGAGGCAGTTGAGATGGAGGATGATGACTTCACGGCCTC
25 CCTGTCCAAGCAGAGCTGCATTACTGAACAAACCCAGTATTTCTTCGATAACGACAGTAA
TCATTCAAGTGGTGTATTAGACTGTGGAACTGTTCCAGAATCTTTCATGGAGAAAAGCTTA
TGAACACCAACTTAATATTCATAATGGTTGAGAGCAAAGGGACATGTCCATGTGACACACG
ACTGC

30 **11 - human nucleotide sequence**
ATGGCTGCTGGCTGCCTGCTGGCCTTGACTCTGACACTTTTCCAATCTTTGCTCATCGGCC
CCTCGTCGGAGAGCCGTTCCCTTCGGCCGTCCTATCAAATCATGGGTGGATAAGATGCA

AGAAGACCTTGTCACTGGCAAAACAGCAAGTGGAGTCAATCAGCTTGTGATATTTAT
GAGAAATATCAAGATTTGTATACTGTGGAACCAAATAATGCACGCCAGCTGGTAGAAATTG
CAGCCAGGGATATTGAGAACTTCTGAGCAACAGATCTAAAGCCCTGGTGAGCCTGGCATT
GGAAGCGGAGAAAGTTCAAGCAGCTCACCAGTGGAGAGAAGATTTTGCAAGCAATGAAGTT
5 GTCTACTACAATGCAAAGGATGATCTCGATCCTGAGAAAAATGACAGTGAGCCAGGCAGCC
AGAGGATAAAACCTGTTTTTCATTGAAGATGCTAATTTTGGACGACAAATATCTTATCAGCA
CGCAGCAGTCCATATTCCTACTGACATCTATGAGGGCTCAACAATTGTGTTAAATGAACTC
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TGTGGCAGGTTTTTGGCAGTGCCACTGGCCTAGCTCGATATTATCCAGCTTCACCATGGGT
10 TGATAATAGTAGAACTCCAAATAAGATTGACCTTTATGATGTACGCAGAAGACCATGGTAC
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GTGGATTGACACTTAACTGATCCGAACATCTGTCTCCGAAATGTTAGAAACCCTCTCAGA
TGATGATTTTCGTGAATGTAGCTTCATTTAACAGCAATGCTCAGGATGTAAGCTGTTTTTCAG
CACCTTGTCCAAGCAAATGTAAGAAAATAAAAAAGTGTGAAAGACGCGGTGAATAATATCA
15 CAGCCAAAGGAATTACAGATTATAAGAAGGGCTTTAGTTTTGCTTTTGAACAGCTGCTTAA
TTATAATGTTTCCAGAGCAAACCTGCAATAAGATTATTATGCTATTCACGGATGGAGGAGAA
GAGAGAGCCCAGGAGATATTTAACAAATACAATAAAGATAAAAAAGTACGTGTATTCAGGT
TTTCAGTTGGTCAACACAATTATGAGAGAGGACCTATTCAGTGGATGGCCTGTGAAAACAA
AGGTTATTATTATGAAATTCCTTCCATTGGTGCAATAAGAATCAATACTCAGGAATATTTG
20 GATGTTTTGGGAAGACCAATGGTTTTTAGCAGGAGACAAAGCTAAGCAAGTCCAATGGACAA
ATGTGTACCTGGATGCATTGGAACCTGGGACTTGTCACTACTGGAACCTCTCCGGTCTTCAA
CATAACCGGCCAATTTGAAAATAAGACAACTTAAAGAACCAGCTGATTCTTGGTGTGATG
GGAGTAGATGTGTCTTTGGAAGATATTAAAAGACTGACACCACGTTTTTACACTGTGCCCCA
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25 AAAGAACCCCAAATCTCAGGAGCCAGTAACATTGGATTTCTTGATGCAGAGTTAGAGAAT
GATATTAAAGTGGAGATTCGAAATAAGATGATTGATGGGGAAAGTGGAGAAAAAACATTCA
GAACTCTGGTTAAATCTCAAGATGAGAGATATATTGACAAAGGAAACAGGACATACACATG
GACACCTGTCAATGGCACAGATTACAGTTTGGCCTTGGTATTACCAACCTACAGTTTTTTAC
TATATAAAAGCCAACTAGAAGAGACAATAACTCAGGCCAGATCAAAAAAGGGCAAAATGA
30 AGGATTCGGAAACCCTGAAGCCAGATAATTTTGAAGAATCTGGCTATACATTCATAGCACC
AAGAGATTACTGCAATGACCTGAAAATATCGGATAATAACACTGAATTTCTTTTAAATTC
AACGAGTTTATTGATAGAAAACTCCAAACAACCCATCATGTAACGCGGATTTGATTAATA

GAGTCTTGCTTGATGCAGGCTTTACAAATGAACTTGTCCAAAATTACTGGAGTAAGCAGAA
AAATATCAAGGGAGTGAAAGCACGATTTGTTGTGACTGATGGTGGGATTACCAGAGTTTAT
CCCAAAGAGGCTGGAGAAAATTGGCAAGAAAACCCAGAGACATATGAGGACAGCTTCTATA
AAAGGAGCCTAGATAATGATAACTATGTTTTCACTGCTCCCTACTTTAACAAAAGTGGACC
5 TGGTGCCTATGAATCGGGCATTATGGTAAGCAAAGCTGTAGAAATATATATTCAAGGGAAA
CTTCTTAAACCTGCAGTTGTTGGAATTAAAATTGATGTAAATTCCTGGATAGAGAATTTCA
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10 TTAATATATCAGTTTATGCTTTTAACAAATCTTATGATTATCAGTCAGTATGTGAGCCCGG
TGCTGCACCAAAAACAAGGAGCAGGACATCGCTCAGCATATGTGCCATCAGTAGCAGACATA
TTACAAATTGGCTGGTGGGCCACTGCTGCTGCCTGGTCTATTCTACAGCAGTTTCTCTTGA
GTTTGACCTTTCCACGACTCCTTGAGGCAGTTGAGATGGAGGATGATGACTTCACGGCCTC
CCTGTCCAAGCAGAGCTGCATTACTGAACAAACCCAGTATTTCTTCGATAACGACAGTAAA
15 TCATTCACTGGTGTATTAGACTGTGGAACTGTTCCAGAATCTTTCATGGAGAAAAGCTTA
TGAACACCAACTTAATATTCATAATGGTTGAGAGCAAAGGGACATGTCCATGTGACACACG
ACTGCTCATAACAAGCGGAGCAGACTTCTGACGGTCCAAATCCTTGTGACATGGTTAAGC

12 - human nucleotide sequence

20 ATGGCTGCTGGCTGCCTGCTGGCCTTGACTCTGACACTTTTCCAATCTTTGCTCATCGGCC
CCTCGTCGGAGGAGCCGTTCCCTTCGGCCGTCCTATCAAATCATGGGTGGATAAGATGCA
AGAAGACCTTGTCACTGCGCAAAAACAGCAAGTGGAGTCAATCAGCTTGTGATATTTAT
GAGAAATATCAAGATTTGTATACTGTGGAACCAAATAATGCACGCCAGCTGGTAGAAATTG
CAGCCAGGGATATTGAGAACTTCTGAGCAACAGATCTAAAGCCCTGGTGAGCCTGGCATT
25 GGAAGCGGAGAAAGTTCAAGCAGCTCACCAGTGGAGAGAAGATTTTGCAAGCAATGAAGTT
GTCTACTACAATGCAAAGGATGATCTCGATCCTGAGAAAAATGACAGTGAGCCAGGCAGCC
AGAGGATAAAAACCTGTTTTTCATTGAAGATGCTAATTTTGGACGACAAATATCTTATCAGCA
CGCAGCAGTCCATATTCCTACTGACATCTATGAGGGCTCAACAATTGTGTTAAATGAACTC
AACTGGACAAGTGCCTTAGATGAAGTTTTCAAAAAGAAATCGCGAGGAAGACCCTTCATTAT
30 TGTGGCAGGTTTTTGGCAGTGCCACTGGCCTAGCTCGATATTATCCAGCTTCACCATGGGT
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5 TTATAATGTTTCCAGAGCAAACCTGCAATAAGATTATTATGCTATTCACGGATGGAGGAGAA
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10 ATGTGTACCTGGATGCATTGGAACCTGGGACTTGTCACTACTGGAACCTCTCCGGTCTTCAA
CATAACCGGCCAATTTGAAAATAAGACAAACTTAAAGAACCAGCTGATTCTTGGTGTGATG
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ATGGGTATTACTTTGCAATCGATCCTAATGGTTATGTTTTATTACATCCAAATCTTCAGCC
AAAGAACCCCAAATCTCAGGAGCCAGTAACATTGGATTTCTTGATGCAGAGTTAGAGAAT
15 GATATTAAAGTGGAGATTTCGAAATAAGATGATTGATGGGGAAAGTGGAGAAAAACATTCA
GAACTCTGGTTAAATCTCAAGATGAGAGATATATTGACAAAGGAAACAGGACATACACATG
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20 AAGAGATTACTGCAATGACCTGAAAATATCGGATAATAACACTGAATTTCTTTTAAATTTT
AACGAGTTTATTGATAGAAAACTCCAAACAACCCATCATGTAACGCGGATTTGATTAATA
GAGTCTTGCTTGATGCAGGCTTTACAAATGAACTTGTCCAAATTAAGTGGAGTAAGCAGAA
AAATATCAAGGGAGTGAAAGCACGATTTGTTGTGACTGATGGTGGGATTACCAGAGTTTAT
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25 AAAGGAGCCTAGATAATGATAACTATGTTTTCTACTGCTCCCTACTTTAACAAAAGTGGACC
TGGTGCCTATGAATCGGGCATTATGGTAAGCAAAGCTGTAGAAATATATATTCAAGGGAAA
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30 TATACTAATCAGATTGGAAGATTTTTTGGAGAGATTGATCCCAGCTTGATGAGACACCTGG
TTAATATATCAGTTTATGCTTTTAAACAAATCTTATGATTATCAGTCAGTATGTGAGCCCGG
TGCTGCACCAAAACAAGGAGCAGGACATCGCTCAGCATATGTGCCATCAGTAGCAGACATA

TTACAAATTGGCTGGTGGGCCACTGCTGCTGCCTGGTCTATTCTACAGCAGTTTCTCTTGA
GTTTGACCTTTCCACGACTCCTTGAGGCAGTTGAGATGGAGGATGATGACTTCACGGCCTC
CCTGTCCAAGCAGAGCTGCATTACTGAACAAACCCAGTATTTCTTCGATAACGACAGTAAA
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5 TGAACACCAACTTAATATTCATAATGGTTGAGAGCAAAGGGACATGTCCATGTGACACACG
ACTGCTCATACAAGCGGAGCAGACTTCTGACGGTCCAAATCCTTGTGACATGGTTAAGCAA
CCTAGATACCGAAAAGGGCCTGATGTCTGCTTTGATAACAATGTCTTGGAGGATTATACTG
ACTGTGGTGGTGTCTTCTG

10 **13 - human amino acid sequence**

MAAGCLLALTLTLFQSLIGPSSEEPFPSAVTIKSWVDKMQEDLVTLAKTASGVNQLVDIY
EKYQDLYTVEPNARQLVEIAARDIEKLLSNRSKALVSLALEAEKVQAAHQWREDFASNEV
VYYNAKDDLDPEKNDSEPGSQRIKPVFIEDANFGRQISYQHAAVHIPTDIYEGSTIVLNEL
NWTSALEDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
15 IQGAASPKDMLILVDVSGSVGLTLKLIRTSVSEMLETLSDDDFVNVASFNSNAQDVSCFQ
HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGGE
ERAQEIFNKYNKDKKVRVFRFSVGQHNRYERGPIQWMACENKGYYYEIPSIGAIRINTQEYL
DVLGRPMVLGDKAKQVQWTVNYLDALELGLVITGTLPVFNITGQFENKTNLKNQLILGVM
GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQKPNPKSQEPVTLDFLDAELEN
20 DIKVEIRNKMIDGESGEKTFRTLKVSQDERYIDKGNRTYTWTVPVNGTDYSLALVLPYTSFY
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25 YTNQIGRFFGEIDPSLMRHLVNI SVYAFNKSYDYQSVCEPGAAPKQGAGHRSAYVPSVADI
LQIGWWATAAAWSILQQFLLSLTFPRLLLEAVEMEDDDFTASLSKQSCITEQTQYFFDNDK
SFSGLDCGNCSRI FHGEKLMNTNLI FIMVESKGTCPCDTRL

14 - human amino acid sequence

30 MAAGCLLALTLTLFQSLIGPSSEEPFPSAVTIKSWVDKMQEDLVTLAKTASGVNQLVDIY
EKYQDLYTVEPNARQLVEIAARDIEKLLSNRSKALVSLALEAEKVQAAHQWREDFASNEV
VYYNAKDDLDPEKNDSEPGSQRIKPVFIEDANFGRQISYQHAAVHIPTDIYEGSTIVLNEL

NWTSALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLETLSDDDFVNVASFNSNAQDVSCFQ
HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGE
ERAQEIFNKYNKDKKVRVFRFSVGQHNYERGPIQWMACENKGYYYEIPSIGAIRINTQEYL
5 DVLGRPMVLAGDKAKQVQWTNVYLDALGLVITGTLVPFNITGQFENKTNLKNQLILGVM
GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
DIKVEIRNKMIDGESGEKTFRTLKVSQDERYIDKGNRTYTWTVPVNGTDYSLALVLPYTSFY
YIKAKLEETITQARSKKGKMKDSETLKPDNFEESGYTFIAPRDYCNDLKI SDNNTTEFLNLF
NEFIDRKT PNNPSCNADLINRVLLDAGFTNELVQNYWSKQKNIGVKARFVVDGGITRVY
10 PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
LLKPAVVGIKIDVNSWIENFTKTSIRDPCAGPVCDCKRNSDVMDCVILDDGGFLLMANHDD
YTNQIGRFFGEIDPSLMRHLVNISVYAFNKSYDYQSVCEPGAAPKQGAGHRSAYVPSVADI
LQIGWWATAAAWSILQQFLLSLTFPRLLEAVEMEDDDFTASLSKQSCITEQTQYFFDNDK
SFSGLDCGNC SRI FHGEKLMNTNLIFIMVESKGTCPCDTRLLIQAEQTS DGPNPCDMVK

15

15 - human amino acid sequence

MAAGCLLALTLTLFQSL LIGPSSEEPFPSAVTIKSWVDKMQEDLVTLAKTASGVNQLVDIY
EKYQDLYTVEPNNARQLVEIAARDIEKLLSNRSKALVSLALEAEKVQAAHQWREDFASNEV
VYYNAKDDL DPEKNDSEPGSQRIKPVFIEDANFRQISYQHAAVHIPTDIYEGSTIVLNEL
20 NWTSALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLETLSDDDFVNVASFNSNAQDVSCFQ
HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGE
ERAQEIFNKYNKDKKVRVFRFSVGQHNYERGPIQWMACENKGYYYEIPSIGAIRINTQEYL
DVLGRPMVLAGDKAKQVQWTNVYLDALGLVITGTLVPFNITGQFENKTNLKNQLILGVM
25 GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
DIKVEIRNKMIDGESGEKTFRTLKVSQDERYIDKGNRTYTWTVPVNGTDYSLALVLPYTSFY
YIKAKLEETITQARSKKGKMKDSETLKPDNFEESGYTFIAPRDYCNDLKI SDNNTTEFLNLF
NEFIDRKT PNNPSCNADLINRVLLDAGFTNELVQNYWSKQKNIGVKARFVVDGGITRVY
PKEAGENWQENPETYEDSFYKRSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
30 LLKPAVVGIKIDVNSWIENFTKTSIRDPCAGPVCDCKRNSDVMDCVILDDGGFLLMANHDD
YTNQIGRFFGEIDPSLMRHLVNISVYAFNKSYDYQSVCEPGAAPKQGAGHRSAYVPSVADI
LQIGWWATAAAWSILQQFLLSLTFPRLLEAVEMEDDDFTASLSKQSCITEQTQYFFDNDK

SFSGVLDCGNCSRI FHGEKLMNTNLIFIMVESKGTCPCDTRLLIQAEQTS DGPNPCDMVKQ
PRYRKGPDVCFDNNVLEDYTD CGGV S

16 - human alpha2 delta-1 amino acid sequence

5 MAAGCLLALTTLTFQSL LIGPSSEEPFPSAVTIKSWVDKMQEDLVTLAKTASGVNQLVDIY
EKYQDLYTVEPNARQLVEIAARDIEKLLSNRSKALVSLALEAEKVQAAHQWREDFASNEV
VYYNAKDDLDPEKNDSEPGSQRIKPVFIEDANFGRQISYQHAAVHIPTDIYEGSTIVLNEL
NWT SALDEVFKKNREEDPSLLWQVFGSATGLARYYPASPWVDNSRTPNKIDLYDVRRRPWY
IQGAASPKDMLILVDVSGSVSGLTLKLIRTSVSEMLETSLDDDFVNVASFNSNAQDVSCFQ
10 HLVQANVRNKKVLKDAVNNITAKGITDYKKGFSFAFEQLLNYNVSRANCNKIIMLFTDGGE
ERAQEIFNKYNKDKKVRVFRFSVGQHNYERGPIQWMACENKGYYYEIP SIGAIRINTQEYL
DVLGRPMVLAGDKAKQVQWTVNYLDALELGLVITGTLPVFNITGQFENKTNLKNQLILGVM
GVDVSLEDIKRLTPRFTLCPNGYYFAIDPNGYVLLHPNLQPKNPKSQEPVTLDFLDAELEN
DIKVEIRNKMIDGESGEKTFRTL VKSQDERYIDKGNRTYTWTVPVNGTDYSLALVLP TYSFY
15 YIKAKLEETITQARSKKGKMKDSETLKP DNFEESGYTFIAPRDYCNDLKI SDNNT EFL LNF
NEFIDRKT PNNPSCNADLINRVLLDAGFTNELVQNYWSKQKNIKGVKARFVVT DGGITRVY
PKEAGENWQENPETYEDSFYK RSLDNDNYVFTAPYFNKSGPGAYESGIMVSKAVEIYIQGK
LLKPAVVGIKIDVNSWIENFTKTSIRDPCAGPVCDCRNSDVMDCVILDDGGFLLMANHDD
YTNQIGRFFGEIDPSLMRHLVNI SVYAFNKS YDYQSVCEPGAAPKQGAGHRSAYVPSVADI
20 LQIGWWATAAAWSILQQFLLSLTFPRLL EAVEMEDDDFTASLSKQSCITEQTQYFFDNDSK
SFSGVLDCGNCSRI FHGEKLMNTNLIFIMVESKGTCPCDTRLLIQAEQTS DGPNPCDMVKQ
PRYRKGPDVCFDNNVLEDYTD CGGV SGLNPSLWYIIGIQFLLLWLVS GSTHRL L

17 - human alpha2 delta-1 nucleic acid sequence

25 GCGGGGGAGGGGGGCATTGATCTTCGATCGCGAAGATGGCTGCTGGCTGCCTGCTGGCCTTG
ACTCTGACACTTTTCCAATCTTTGCTCATCGGCCCCCTCGTCGGAGGAGCCGTTCCCTTCGG
CCGTCACTATCAAATCATGGGTGGATAAGATGCAAGAAGACCTTGTCACACTGGCAAAAAC
AGCAAGTGGAGTCAATCAGCTTGT TGATATTTATGAGAAATATCAAGATTTGTATACTGTG
GAACCAAATAATGCACGCCAGCTGGTAGAAATTGCAGCCAGGGATATTGAGAACTTCTGA
30 GCAACAGATCTAAAGCCCTGGTGAGCCTGGCATTGGAAGCGGAGAAAGTTCAAGCAGCTCA
CCAGTGGAGAGAAGATTTTGCAAGCAATGAAGTTGTCTACTACAATGCAAAGGATGATCTC
GATCCTGAGAAAAATGACAGTGAGCCAGGCAGCCAGAGGATAAAACCTGTTTTTCATTGAAG

ATGCTAATTTTGGACGACAAATATCTTATCAGCACGCAGCAGTCCATATTCCTACTGACAT
CTATGAGGGCTCAACAATTGTGTTAAATGAACTCAACTGGACAAGTGCCTTAGATGAAGTT
TTCAAAAAGAATCGCGAGGAAGACCCTTCATTATTGTGGCAGGTTTTTGGCAGTGCCACTG
GCCTAGCTCGATATTATCCAGCTTCACCATGGGTTGATAATAGTAGAACTCCAAATAAGAT
5 TGACCTTTATGATGTACGCAGAAGACCATGGTACATCCAAGGAGCTGCATCTCCTAAAGAC
ATGCTTATTCTGGTGGATGTGAGTGGAAAGTGTTAGTGGATTGACACTTAAACTGATCCGAA
CATCTGTCTCCGAAATGTTAGAAAACCTCTCAGATGATGATTTCGTGAATGTAGCTTCATT
TAACAGCAATGCTCAGGATGTAAGCTGTTTTTCAGCACCTTGTTCCAAGCAAAATGTAAGAAAT
AAAAAAGTGGTTGAAAGACGCGGTGAATAATATCACAGCCAAAGGAATTACAGATTATAAGA
10 AGGGCTTTAGTTTTGCTTTTGAACAGCTGCTTAATTATAATGTTTCCAGAGCAAAGTCAA
TAAGATTATTATGCTATTCACGGATGGAGGAGAAGAGAGAGCCCAGGAGATATTTAACAAA
TACAATAAAGATAAAAAAGTACGTGTATTCAGGTTTTTCAGTTGGTCAACACAATTATGAGA
GAGGACCTATTCAGTGGATGGCCTGTGAAAACAAAGGTATTATTATGAAATTCCTTCCAT
TGGTGCAATAAGAATCAATACTCAGGAATATTTGGATGTTTTGGGAAGACCAATGGTTTTTA
15 GCAGGAGACAAAGCTAAGCAAGTCCAATGGACAAATGTGTACCTGGATGCATTGGAACTGG
GACTTGTCACTTACTGGAAGTCTTCCGGTCTTCAACATAACCGGCCAATTTGAAAATAAGAC
AACTTAAAGAACCCAGCTGATTCTTGGTGTGATGGGAGTAGATGTGTCTTTGGAAGATATT
AAAAGACTGACACCACGTTTTTACACTGTGCCCCAATGGGTATTACTTTGCAATCGATCCTA
ATGGTTATGTTTTATTACATCCAAATCTTCAGCCAAAGAACCCCAAATCTCAGGAGCCAGT
20 AACATTGGATTTCTTTGATGCAGAGTTAGAGAATGATATTAAAGTGGAGATTCGAAATAAG
ATGATTGATGGGGAAAGTGGAGAAAAAACATTGAGAACTCTGGTTAAATCTCAAGATGAGA
GATATATTGACAAAGGAAACAGGACATACACATGGACACCTGTCAATGGCACAGATTACAG
TTTGGCCTTGGTATTACCAACCTACAGTTTTTACTATATAAAAGCCAAACTAGAAGAGACA
ATAACTCAGGCCAGATCAAAAAGGGCAAAATGAAGGATTCGGAAACCTGAAGCCAGATA
25 ATTTTGAAGAATCTGGCTATACATTCATAGCACCAAGAGATTACTGCAATGACCTGAAAAT
ATCGGATAATAACACTGAATTTCTTTTAAATTTCAACGAGTTTATTGATAGAAAACTCCA
AACAACCCATCATGTAACGCGGATTTGATTAATAGAGTCTTGCTTGATGCAGGCTTTACAA
ATGAACTTGTCCAAAATTACTGGAGTAAGCAGAAAAATATCAAGGGAGTGAAAGCACGATT
TGTGTGACTGATGGTGGGATTACCAGAGTTTATCCCAAAGAGGCTGGAGAAAATTGGCAA
30 GAAAACCCAGAGACATATGAGGACAGCTTCTATAAAAGGAGCCTAGATAATGATAACTATG
TTTTCACTGCTCCCTACTTTAACAAAAGTGGACCTGGTGCCTATGAATCGGGCATTATGGT
AAGCAAAGCTGTAGAAATATATATTCAAGGGAACTTCTTAAACCTGCAGTTGTTGGAATT

AAAATTGATGTAAATTCCTGGATAGAGAATTTACCCAAAACCTCAATCAGAGATCCGTGTG
CTGGTCCAGTTTGTGACTGCAAAAGAAACAGTGACGTAATGGATTGTGTGATTCTGGATGA
TGGTGGGTTTCTTCTGATGGCAAATCATGATGATTATACTAATCAGATTGGAAGATTTTTT
GGAGAGATTGATCCCAGCTTGATGAGACACCTGGTTAATATATCAGTTTATGCTTTTAACA
5 AATCTTATGATTATCAGTCAGTATGTGAGCCCGGTGCTGCACCCAAAACAAGGAGCAGGACA
TCGCTCAGCATATGTGCCATCAGTAGCAGACATATTACAAATTGGCTGGTGGGCCACTGCT
GCTGCCTGGTCTATTCTACAGCAGTTTCTCTTGAGTTTGACCTTTCACGACTCCTTGAGG
CAGTTGAGATGGAGGATGATGACTTCACGGCCTCCCTGTCCAAGCAGAGCTGCATTACTGA
ACAAACCCAGTATTTCTTCGATAACGACAGTAAATCATTGAGTGGTGTATTAGACTGTGGA
10 AACTGTTCCAGAATCTTTCATGGAGAAAAGCTTATGAACACCAACTTAATATTCATAATGG
TTGAGAGCAAAGGGACATGTCCATGTGACACACGACTGCTCATAACAAGCGGAGCAGACTTC
TGACGGTCCAAATCCTTGTGACATGGTTAAGCAACCTAGATACCGAAAAGGGCCTGATGTC
TGCTTTGATAACAATGTCTTGGAGGATTATACTGACTGTGGTGGTGTCTTCTGGATTAAATC
CCTCCCTGTGGTATATCATTGGAATCCAGTTTCTACTACTTTGGCTGGTATCTGGCAGCAC
15 ACACCGGCTGTTATGACCTTCTAAAAACCAATCTGCATAGTTAAACTCCAGACCCTGCCA
AAACATGAGCCCTGCCCTCAATTACAGTAACGTAGGGTCAGCTATAAAATCAGACAAACAT
TAGCTGGGCCTGTTCCATGGCATAACACTAAGGCGCAGACTCCTAAGGCACCCACTGGCTG
CATGTCAGGTGTCAGATCCTTAAACGTGTGTGAATGCTGCATCATCTATGTGTAACATCA
AAGCAAAATCCTATACGTGTCCTCTATTGGAAAATTTGGGCGTTTGTGTGTCATTGTTGG
20 T

18 - nucleotide sequence

GGGGATTGATCTTCGATCGCG

25 19 - nucleotide sequence

CTGAGATTTGGGGTTCTTTGG

20 - nucleotide sequence

TCGCCACCATGGCTGCTGGCTGCCTGCTG

30

21 - nucleotide sequence

TCGGAATTCCTCAGTGATGGTGTGATGGTGTGAGAAACACCACCACAGTCGGT